

AN INTERESTING HISTORY.

GOLD PENS:

WHO INVENTED THEM; WHEN, AND WHERE.

FOLEY'S DIAMOND POINTED

GOLD PENS:

HOW THEY ARE MADE; THE MACHINERY USED; THE DIFFERENT
PROCESSES FULLY ILLUSTRATED.

DIAMOND (IRIDIUM) POINTS:

WHAT THEY ARE, AND HOW APPLIED,

THEIR GREAT VALUE.

THE IMPORTANT FEATURES OF A GOOD GOLD PEN.

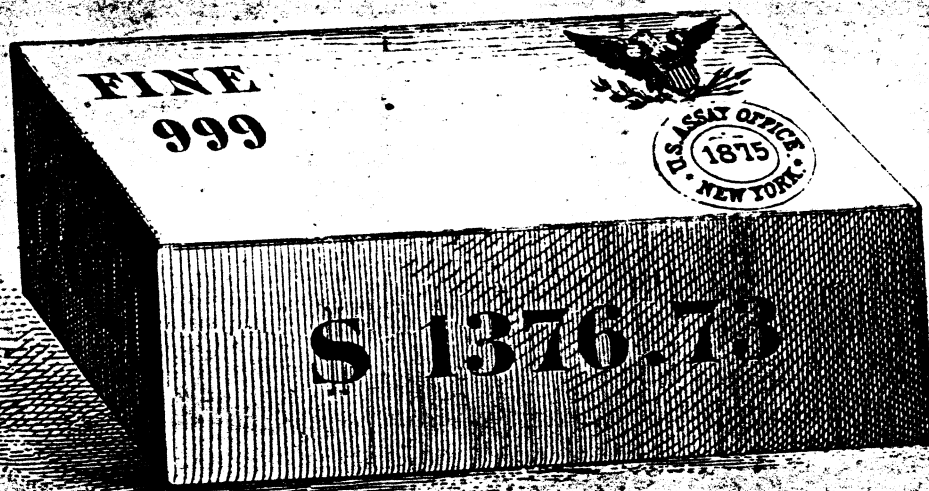


\$18,300, Gold Value; or \$300 per ounce.

Diamond (Iridium) Points, carefully selected for

FOLEY'S CELEBRATED "BANK" GOLD PENS.

The finest and most valuable lot of Iridium in the world. Exact size of Bottle: for description see page 52.



Bar of fine gold (exact size) as received from the United States Assay Office, ready for melting to manufacture

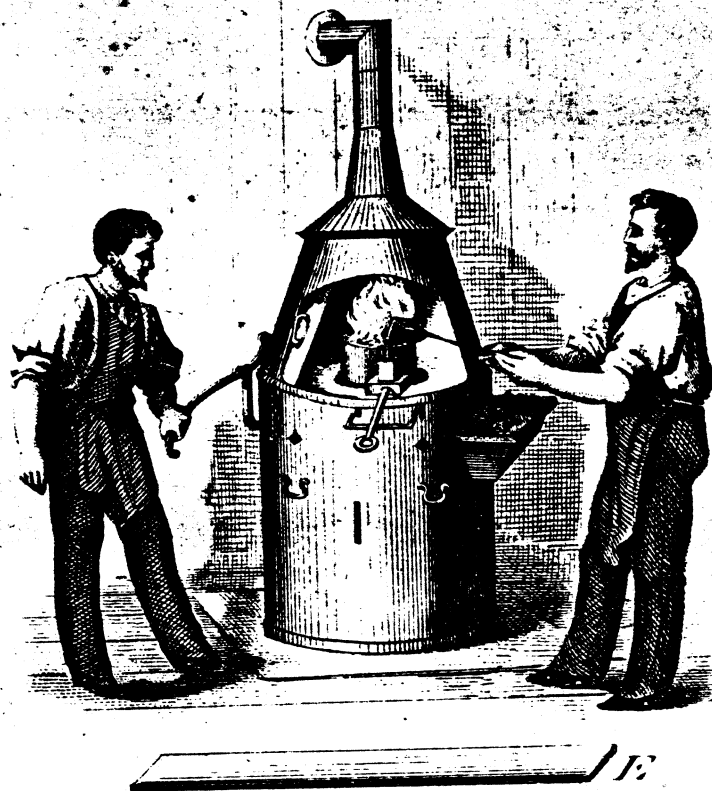
FOLEY'S CELEBRATED "BANK" GOLD PENS.

The Pen is an instrument for writing with a fluid. Pens of some kind have been in use from very ancient times, and were of various kinds, adapted to the material upon which the written characters were to be impressed. Upon stone or metallic plates, gravers of steel served for writing, and such are referred to by Job, in speaking of an *Iron Pen*. For the waxen tablets of the ancients a metallic *Stylus* was employed, one end of which was sharpened for marking, and the other end was flattened for erasing the marks and smoothing the wax. It was also the practice in ancient times, as among the Chinese at the present day, to paint the letters with a fine hair pencil.

PENS OF REED

Were made at a very early period for the use of a fluid ink upon *papyrus*. The reed for these Pens was found in Egypt, and it is still used in oriental countries. The introduction of paper in Europe in the 14th century made necessary Pens of finer character, and QUILLS OF THE GOOSE AND SWAN next came into use, and for extremely fine writing those of other birds, as of the crow, were found well adapted. A great trade grew up in these Pens, and continued for several centuries, chiefly in Poland and Russia; in a single year St. Petersburg sent to England over twenty-seven millions of quills. The immense consumption of quills, and the loss of time and the

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FORGE FOR MELTING THE GOLD.

In this the Alloyed Gold is melted. It is fine Bar Gold (see page 43), and the quantity of alloy added is prepared with much care, and consists of pure Copper and Silver. A small quantity of each is added to the fine bar of gold. Pure Gold being too soft, the alloy is added to make it hard and durable and of a uniform elasticity. The alloyed gold is put into a sand crucible and placed in a charcoal fire, melted to a liquid and then poured into an iron ingot which produces a bar of the required width and thickness according to the size of Pen it is intended for, generally about half inch thick, 20 inches long, $1\frac{1}{2}$ inches in width (see E). After the bar is cooled it is removed from the ingot, the rough edge is filed smooth and hammered, and it is then ready for the—

difficulty in making and keeping them in order, finally created the necessity for a more durable substitute. In the year 1803 Mr. Wise, an Englishman, made the

FIRST STEEL PEN.

This invention was followed up by other English manufacturers, until about the year 1825, when the production was largely increased, and the cost was greatly reduced. The manufacture was chiefly confined to Birmingham, England. Steel Pens of different makes and forms are still used in large quantities, though it is now well established that their use subjects persons to cramps of the muscles, and to a peculiar kind of paralysis of the hand and arm.

THE GOLD PEN

Has been for the past thirty years a prime necessity for those who write. It outwears the steel Pen, it is as easy in the hand as a quill, its point is everlasting, and, with proper care, the longer it is used the better it becomes. This paragraph is written with one of FOLEY'S BANK PENS made in and dated 1852. After 23 years constant use it is as good as it was the day it was finished. Though the making of Gold Pens is now apparently a small thing, it has required the exercise of much ingenuity and no little patience and skill to bring it to its present state of perfection; and if it be a matter of



ROLLING MILL, OR STOCK ROLLS.

This machine rolls or stretches the bar of gold to perhaps ten times its original length, reducing it to a ribbon about $\frac{1}{16}$ of an inch thick. Its width ought to be just enough to cut out two blank Pens. The machine is propelled by steam or hand power. It is complicated, very heavy, made and finished in the finest and most expensive manner, and regulated by two screws on each end. Each time the bar passes through the screws are turned down, until the required thickness is attained, and it is then ready for the—

interest to the curious reader to trace the progress and persistent inventive skill, which has been illustrated in the Steamboat by FITCH and FELTON, in the TELEGRAPH by MORSE, in the Sewing Machine by HOWE, the Power Press by HOE, the Reaper by McCORMICK, and Hard Rubber by GOODYEAR, it is no less a subject of interest to know the gradual steps by which the knowledge of making a perfect and durable Gold Pen was reached.

THE GOLD PEN,

as we know it and use it to-day, was the invention of an English engineer,

JOHN ISAAC HAWKINS

by name, who taking up this subject by way of experiment, followed it (literally) from point to point for upwards of

THIRTY YEARS,

until he hit upon the material now generally adopted, called

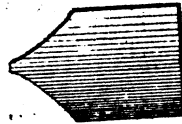
IRIDIUM,

and from this hard substance succeeded in making the so-called

DIAMOND POINT,

which is the great characteristic feature of the GOLD PEN. After making and dealing in these Pens in England for several years, Mr. Hawkins finally came to the United States, having sold his interest

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BLANK PRESS AND DIE.

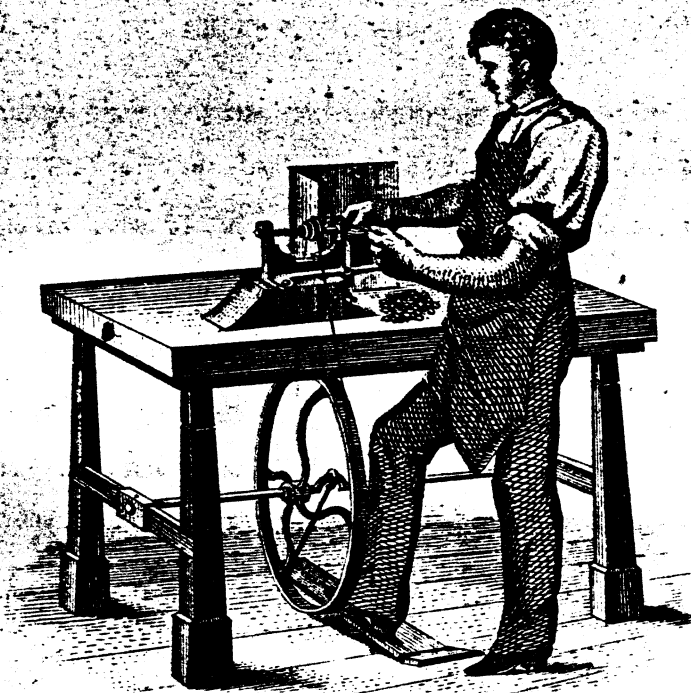
After the bar of gold is rolled into a long thin ribbon, the blank Pen "C" is cut from it in two rows. One long strip or ribbon will cut from five hundred to a thousand blanks. The cutter is a lever press—with die set. The blank as it is cut drops through into a drawer underneath. This blank Pen is now ready for the—

in the business to an American firm, who were the first in the field here.

Mr. Hawkins was born in England about the year 1775, and died eight or ten years since in Bordentown, N. J., when about 90 years of age. In the advanced years of his life, he took much pleasure in relating his first experiments in pen making, giving many interesting details of his persistent efforts during several years to secure success. From the statements thus made, and from other valuable information obtained by me while in Europe in 1863, I am able to compile the following interesting account of this invention.

1804 TO 1834—EARLY EXPERIMENTS.

Before discovering the use of Iridium to point Gold Pens, which he did in the year 1834, Mr. Hawkins had been for more than thirty years seeking a suitable material to solder to gold in so small a quantity as to make a fine and smooth point, that might be wiped clean as easily as a quill pen. He had, during these years, made many specimens of durable Pens, which, however, on trial proved deficient in some quality or other. Some of his points were made of rubies set in gold sockets; but these nibs were clumsy and could not be wiped clean, and all the elasticity that could be given to the Pens was too far from the point, so that the best of them felt hard in the



BURRING MACHINE.

This is used to mill out a recess across the point end of the blank "D" to receive the "Iridium" which is the celebrated *Diamond Point* of the Gold Pen. This done, the blank is now ready to have the Iridium set in, as is shown in the next Engraving.

hand while writing. This seemed a difficulty not to be overcome. He cemented diamond powder, some coarse and some fine, inside the points of quill Pens; but the particles of diamond were by degrees dragged out of the cement by the paper, and thus caused a feeling of roughness while writing. The quill Pen, too, was subject to be warped by the alternations of wet and dry air, and thus rendered useless. After thirty years of labor and fruitless experiments, Mr. Hawkins suddenly received unexpected aid from a discovery made as if for his special use.

DISCOVERY OF THE DIAMOND IRIIDIUM POINT, AND ITS APPLICATION
TO GOLD PENS.

After a multitude of experiments, and about the

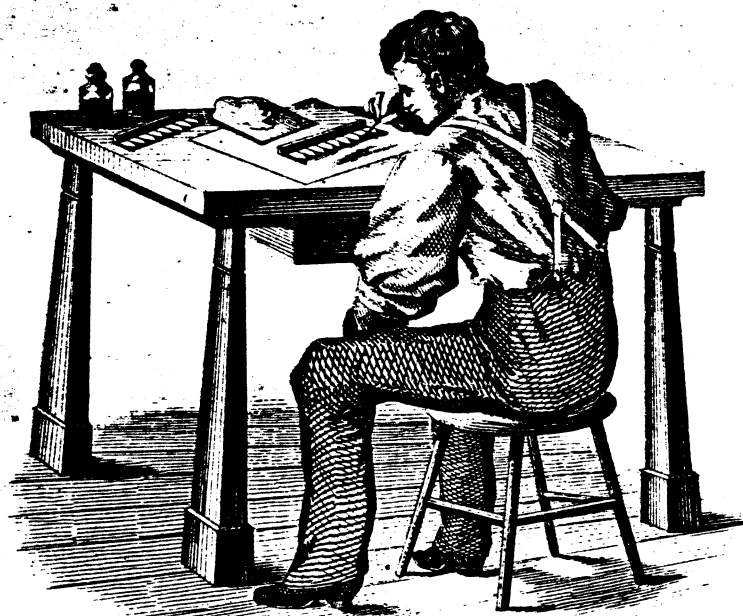
YEAR 1833,

Mr. Hawkins learned that the celebrated English philosopher, Dr. Wollaston, had sent some pieces of *Rhodium* and some particles of the native alloy of *Osmium and Iridium*, to Mr. Robinson, manufacturer of Ruby Pens, in London, requesting him to make some Pens with each metal. After a while, Mr. Robinson sent Dr. Wollaston a few Pens with points made of the Rhodium, but sent back the Iridium, saying that it was

TOO HARD

to be ground or wrought into figure for Pen points. This information stimulated fresh experiments upon this material, for if it was too hard

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SELECTING AND PUTTING ON THE DIAMOND POINTS.

This is done by placing a number of blanks in a row on a strip of wood made for that purpose. The diamond points being carefully selected, a small pencil brush is dipped into liquid borax and with it the points are picked up and set into the recess. The workman uses a microscope to enable him to place the points properly. When this is done, the "blank" is sent to the next man, who fixes the points permanently :

to be ground or wrought into shape, it must be, thought Mr. Hawkins, exceedingly durable in use—the very object for which so much money and time had been expended.

He supposed that diamond dust must abrade the Iridium, although it might be slowly, if he gave great speed to the grinding surface. With this view Mr. Hawkins fitted up a lathe capable of giving ten thousand revolutions a minute to the mandril; and on this a lap of two inches in diameter (see page 73), the surface of which ran five thousand feet a minute, being eight hundred and thirty-three feet a second. He applied diamond dust with oil on the lap, and holding a bit of Iridium against it, found to his great delight, that it was abraded a little in five minutes. He then applied to the lap or grinding lathe a Ruby which was ground away as much in one-third of the time. He thus became satisfied that he had at last attained the object of many years research, for the Ruby was reported not to wear sensibly away in writing.

Success:

In order to save labor in forming the point, very small pieces of Iridium must be used. At first a pair of small pieces was soldered to a thin plate of silver and formed into a Pen. This Pen is still in existence, minus one speck of the Iridium, which after some days writing came off and rendered the Pen useless.

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SWEATING ON THE DIAMOND POINTS.

A lot of blank Pens are placed in rows as above, on a flat piece of charcoal; the blow pipe is then applied to the gas burner and a flame is directed steadily upon the point of the blank until the gold is thoroughly melted around the diamond or Iridium point. This is the "sweating" process (no solder being used) in making Foley's Pens. Hence it is that the points never come off. It requires much care and experience, for if the heat is applied a moment too long the whole Pen is melted and made useless.

The point is now applied to the copper lathe (see 73) and brought to a square even face upon both sides and end. It is then ready for the blank rolls.

The fine quality of Gold, over 16-karat fine, used in the manufacture of FOLEY'S Solid Gold Pens cannot be affected in the slightest degree by the strong acid with which most of the good inks are now made. Many of the Pens in the market at the present time are made of 10, 12 and 14-karat Gold and the points are put on with solder. The acid of the ink will turn the cheap Pens black and separate the points, which will soon fall off, and make the Pen worthless. Again, many Pens are made so light, being almost as thin as paper, that they soon wear out. A poorly made Gold Pen, no matter how cheap, is the most expensive in the end.

THE FIRST GOLD PEN MADE IN 1834.

He next soldered a pair of specks of Iridium to a plate of Gold, and wrought this combination into an excellent Pen, which had all the pleasant elasticity of the quill, and completely realized all his hopes on the subject, satisfying him that he had a Pen for his lifetime, with fair usage.

THE FIRST PENS SOLD.

He then made the third Pen of the kind, which he sold April 26, 1834, to Mr. Vine, an eminent merchant of London, in the Russian trade, who soon procured several orders for the Pens from St. Petersburg for the use of the Czar and others. The seventh Pen made was selected by Mr. Christopher Kreeft, the Mecklenburg Consul in London, April, 1834, as suiting his hand, and from this sale many orders were also received.

PRICES OF THE FIRST GOLD PENS.

Mr. Hawkins sold the first seven Pens made, for twelve shillings Sterling each, without a holder, (about \$3.00). The Pen then made was no larger than the present No. 3 size, now sold at \$1.50 each. The price he received afforded him but a very small profit, as every Pen at this time had to be made almost entirely by hand—rounded and hammered into shape with a hammer. The price

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THE BLANK ROLLS.

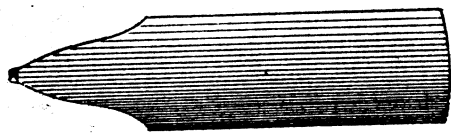
With this machine the blank Pen is rolled down or stretched to the length shown above. This is done by placing the blank between the two rolls. The under roll has a recess in which the point is protected, and the pen is passed through the rolls several times until the required length is attained. The blank as shown above is now ready to have the Springiness or Elasticity hammered into it.

continued at twelve shillings till June following, when it was raised to fifteen shillings, or \$3.75, with a view of making the business worth pursuing. In December, 1834, finding the Iridium growing very scarce and dear, and that dealers in the Pens required a profit of thirty per cent., in order to introduce them and *push* the sales, the price was raised to *twenty shillings*, or \$5.00, for the Pen only, not including Pencil or Pen Holder, and he found no difficulty in obtaining that price, which was continued during the twelve years that the business was solely in Mr. Hawkins' hands in England; and his successor in London maintained that price up to the time he left London, in September, 1848.

SCARCITY OF IRIDIUM.

In the early stage of the business, namely in March, 1834, Mr. Hawkins says, "I procured the native alloy of Iridium from Mr. Johnson of Hatton Garden, London, who allowed me to select from his small stock of a few ounces such particles as suited my purpose, at thirty shillings an ounce. Mr. Johnson continued to supply me at that price till July, 1835, when I had picked out all that would suit, and he said that he did not expect any more for some time. I had then only enough to make three dozen Pens, and knew not where to procure more. I, therefore, went to the British Association for the Advancement of Science, which met at Dublin on the 10th of August, 1835, to inquire of the great Chemists of the time, expected to be there assembled,

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HAMMERING TO PRODUCE THE SPRING OR ELASTICITY.

The nib of each Pen, as shown above, is hammered on a small anvil or stake, of curved surface, until the required spring or elasticity is secured, so that the nib of the Pen will bend almost double and again return to its proper position. It is now in a rough and uneven shape and prepared for the *second* cut to give the Pen its proper form; by the—

where I could be supplied with the precious material. On asking Dr. Dalton of Manchester, Dr. Thomas of Glasgow, Dr. Daubeny of Oxford, and many other eminent Chemists, present at the meeting, where I could procure the substance, each, without communicating with any of the others, answered that I could obtain it of Mr. Johnson, Hatton Garden, London. I told them that I had exhausted his stock, and had only enough to make three dozen Pens. They replied then, "You must go to South America for it," on which I said, "In that event I must charge five pounds per Pen," (or \$25). One gentleman said, he would rather give ten guineas Sterling (fifty dollars), than not possess so great a comfort.

"On my return from Dublin to London, stopping at Birmingham August 21, 1835, I found a half ounce of Iridium at a chemists, and purchased it for fifteen shillings, expecting to find two or three per cent. of particles fit for pens; but obtained less than two per cent.; and the refuse was of so little value that the useful points really cost me at the rate of fifty pounds per ounce (say \$250). After making this purchase I asked the chemist where he had procured the Iridium. He answered, 'Of Mr. Johnson, of Hatton Garden, London.' Shortly before I left London, a chemist told me that he would be glad to have some of the best quality at one hundred and thirty pounds sterling (\$650) per ounce." The present (1875) price in New York for choice Iridium is from \$100 to \$400, and fine Iridium



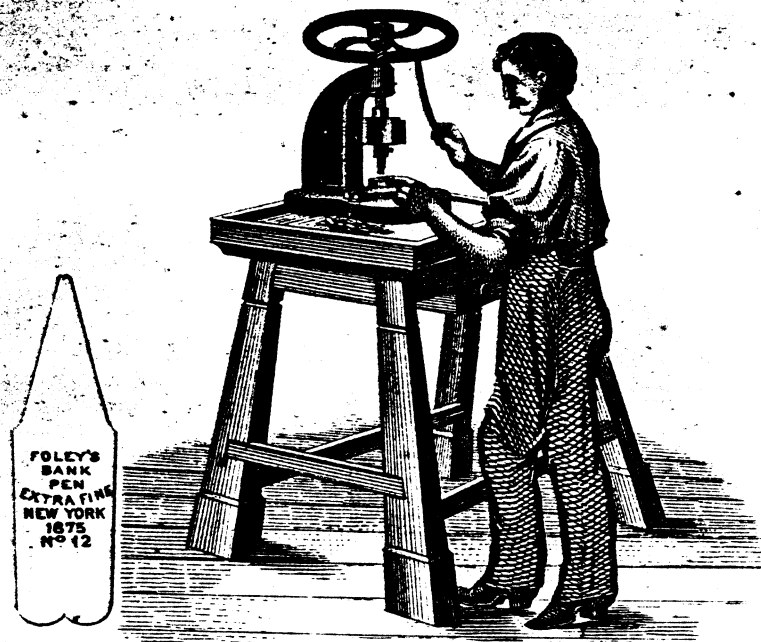
SECOND CUTTING DIE AND PRESS.

This operation takes off a narrow strip all around except at the point, and gives the Pen its proper even form in the flat state as above shown and it is then ready for the—

is even now very scarce. The crystallized alloy of Osmium and Iridium is rarely found in greater quantity than a few grains to the ton of the South American platinum; hence its scarcity. It is said that Russian platinum yields a greater proportion, but I have never seen any of the Russian equal to the South American for hardness and toughness.

Iridium is the most infusible, and, when compact, one of the heaviest of the metals; very hard, unmalleable and brittle, and, when polished, resembling platinum. It is oxidizable only at a red-heat and in a state of fine division, and, if pure, is not attacked by any acid. It takes its name from the variety of colors exhibited by a solution of oxide of iridium and potassia in hydrochloric acid.—TURNER, REQUANT.

IRID-OSMINE OR IRID-OSMIUM. Native oxide of iridium, in which the iridium is more or less replaced by platinum, rhodium and ruthenium, generally occurs in small irregular flattened grains, harder, heavier and of a rather paler steel-grey color than native platinum, with which it is found in the Province of Choco in South America, in the Ural Mountains, in the alluvial gold of California, in Australia, Buenos Ayres, &c. Irid-osmium is also known by the name of native alloy—BRANDE.

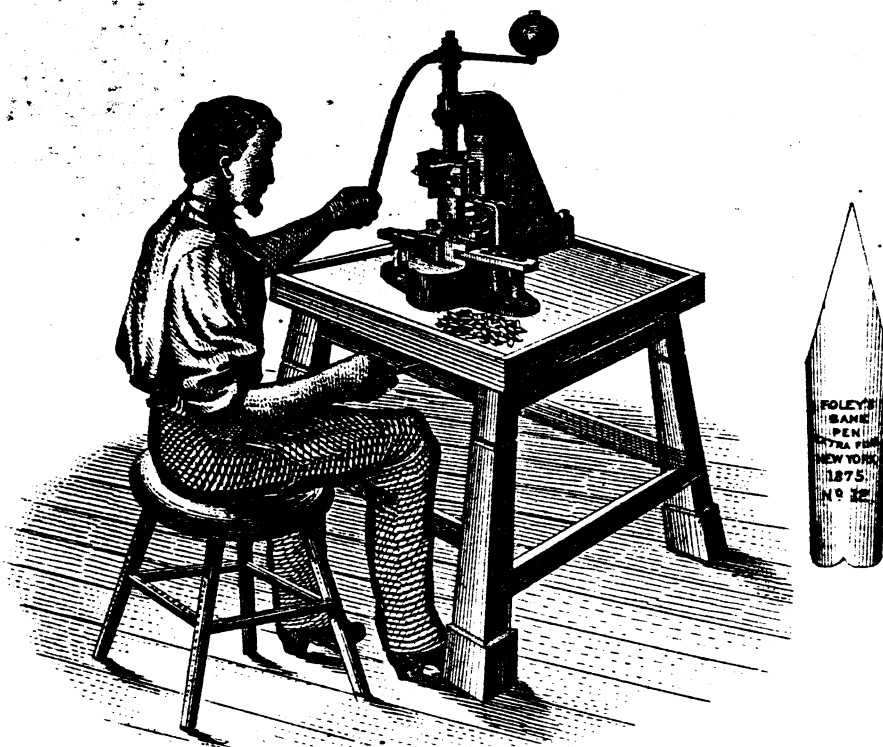


STAMPING PRESS.

This is a screw press. The name stamp is set, and the pen, still flat, is placed on a hard steel plate with a guide to slide the pen into, so that every Pen is lettered uniformly and in exact position. Nearly one thousand Pens can be stamped in an hour. The Pen as above shown is now ready to have the sides *raised* up into shape, which is done in the—

TRANSFER OF THE GOLD PEN MANUFACTURE TO AMERICA, 1835.

"While at Birmingham," Mr. Hawkins says, "I concluded an agreement with the Rev. Charles Cleveland, brother-in-law of Mr. Simeon Hyde, of New York, for the sale of the business, and by his desire transferred all my right to his brother, Mr. Aaron Porter Cleveland, for the sum of three hundred pounds sterling (\$1,500) then in hand paid, and a percentage arising from the sale of Pens. This transfer is dated August 22, 1835; and one point in the agreement was an engagement on my part to stop in New York and instruct a confidential workman of his nomination there, in the art or process of making the Pens, while on my way to Bordentown, New Jersey, whither I contemplated then shortly after to go and settle. I also bound myself neither directly nor indirectly to make use of, nor communicate the said art or process of manufacturing Pens to any other person except to the said Aaron Porter Cleveland, and to such of his confidential assistants as he should, in writing, require. Immediately on signing this agreement, I disclosed the whole process to Mr. Cleveland, and gave him the names and addresses of all the dealers in materials and tools used in the work, and also of all the dealers in the Pens; and a few months afterwards I turned over the manufactory to him, and thus released myself from a business which increased my care too much for comfort and health, since



RAISING UP MACHINE.

This is a screw press of great power. With this, the Pen from its flat shape is bent into the round or partially cylindrical form. To insure perfect shape and permanent set to the new curve, only a press of great power and dies of extreme exactness can be used successfully. This press is very heavy and complicated with many parts and very expensive fittings. The principal parts are the half round bed on which the flat Pen rests; and the plunger, half round also, to fit exactly, which is struck down with great force by the action of the screw. This blow rounds the back and sides of the Pen. The plunger is brought up by an excentric and lever acting on two jaws, one on each side of the machine. This completes the perfect shape of the Pen as above shown in its well known form.

This machine was invented by an ingenious Frenchman, John Countis, a machinist, while employed in Mr. Foley's factory. It is the most perfect and successful Raising Machine ever devised for Gold Pen making, and is capable of raising and shaping fifty Pens an hour.

The next operation is to cut or divide the point in the Point.Cutting Lath.

I had at the time full employment as a civil engineer and Patent Agent.

"Mr. Cleveland carried on the manufacture of the Pens in London from January 21, 1836, to the end of May of the same year; but, being anxious to go to New York and establish the business there, he requested me to sell the British concern for the sum he gave me for an unlimited extent of territory. In order, however, to have something tangible to sell, there being no patent for the article, it was necessary that the manufacture be kept on and the public supplied with the Pens. I therefore, at the request of Mr. Cleveland, resumed the manufacture and sale of the Pens, under an agreement dated the 8th day of August, 1836, by which I engaged to allow Mr. Cleveland two shillings and six pence sterling for each Pen sold, undertaking at my own expense to advertise them to a reasonable extent."

The following interesting letter continues the story of the Gold Pen:

LETTER FROM AARON PORTER CLEVELAND,
maker of the first Gold Pen made in America:

New Orleans, La., April 8th, 1875.

JOHN FOLEY, Esq., *New York,*

DEAR SIR:—I received yours of March 23d yesterday.

The secret and instructions for making the Gold Pen were purchased by me



CUTTING THE DIAMOND POINT.

With this POINT CUTTING LATHE, after the Pen is carefully adjusted in a swing frame, the diamond or Iridium point is brought centrally upon the edge of a thin copper disk, about three inches in diameter, kept in rapid motion. The edge of the disk is charged with fine emery and oil. The Iridium is soon slit into two points, and thus is laid the foundation for the slit of the Pen. The Pen is next placed in a pen-holder and passed over to the—

from the inventor, Mr. Hawkins, for £300, in the spring of 1836. I learned to make the Pen, and sold a few in London before I left at £1 each. The gold was tempered by the hammer and the points put on with a blow pipe and ground with sharp emery. Four Pens were all that a good workman could finish in one day. I returned to New York in the fall, and by Mr. Hyde's request, taught Mr. Levi Brown how to make the Pen in October, 1836. I made but one or two Pens in doing so. I had no interest in the matter except to make the purchase for Mr. Hyde, learn the process of making, and teach any one he might designate.

Yours respectfully,

AARON PORTER CLEVELAND.

GO-AHEAD AMERICAN WORKMEN.

Mr. Cleveland in New York instructed

MR. LEVI BROWN

in the process of making the Pens; in his employ Mr. George Barney and other ingenious workmen learnt the art, and contrived several labor-saving tools, by which they were enabled to manufacture with much more expedition than the English manufacturers could with their first contrived tools and slow-motioned workmen.

Mr. Barney and other workmen, from time to time, left Mr. Brown, and began working on their own account. These, necessarily, employed mechanics, the more ingenious and enterprising part of whom, in their



SLITTING LATHE.

With this the slit is extended from the points to the full length of the nib. A very fine circular steel saw is used, and the skillful workman uses no guide. He simply places the Pen in a holder and with both hands and an experienced eye will slit, perfect and straight, one hundred Pens an hour. A fine hand-saw is used to perfect the end of the slit, which must end exactly perpendicular to both sides. This prevents the slit or Pen from cracking further up, and destroying the Pen. After slitting as above, the Pen is ready for—

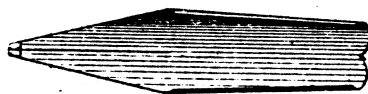
turn, separated from their employers; and thus the manufacturers of the Pens have become numerous. Nearly all of them are located in the city of New York.

The following is a correct list of all the Gold Pen Manufacturers in the *United States*, in 1849:

LEVI BROWN,	G. & E. M. SMITH,
JOHN FOLEY,	H. H. HOUGHTON & Co.,
LOVEJOY & GLOVER,	DAWSON, WARREN & HYDE,
- BENEDICT & BARNEY,	WILMARTH & BROTHER,
CRAYTEY & BUEL,	BARD & BROTHER,
SPENCER, RENDELL & DIXON,	GREATON & BROWN,
G. W. SHEPPARD,	J. PICQUET,
	EATON, GRIFFITHS & Co.

Except Mr. Foley, all the above houses have retired. Some have gone into other business, and more than half of those above named are now deceased. There are, however, in the year 1875, about the same number of factories in operation as existed in 1849, producing, however, nearly four times the quantity of Gold Pens.

Mr. Hawkins pays a tribute to the energy and the singular skill displayed by the American makers; and, although he was thoroughly English in his sympathies and proclivities, he did not hesitate to express his disapproval of the "jog-trot" habits of his fellow-countrymen, in



BURNISHING THE NIBS.

This is done with a hammer, burnisher and stake. Slitting the Pen removes more or less of the gold. The two edges must now be brought together again by hammering the outer edges of the nibs on the stake. The Pen is burnished on both sides to remove all unevenness; and the nibs are set even by the fingers.

After leaving the burnisher the Pen is ready to receive the most important part of its construction—from the——

terms which are amusingly vehement, when he said, "I am free to confess that the New York manufacturers have advanced much beyond me in dispatch; the ingenuity of the American workmen, who delight in 'go-ahead' having been encouraged and excited in the construction of several labor-saving tools, and ready methods of working, while the jog-trot, the sluggish, and let-well-alone feelings of the English workmen in my employ formed a barrier to the introduction of new tools and methods of working into my manufactory, when indicated by experience."

In the 40 years which have elapsed since the introduction of the Gold Pen manufacture into the United States, great progress has been made; active competition, with an extensive demand, has resulted in the production of perfect GOLD PENS at less than one-half the early price.

The present No. 3 Pen was the only size of Gold Pen made from 1834 to 1845, and was sold at following prices:

April 26, 1834, price in London,	12s. or \$3.00.
June, 1834, " "	15s. or 3.75.
December, 1834, " "	20s. or 5.00.
January, 1839, " "	20s. or 5.00.
1840, price in New York,	5.00.
1841, " "	6.00.
1845, " "	5.00.



GRINDING LATHE.

This consists of one large and two or three smaller copper wheels and one tin slitler fitted on a steel spindle, running on true centers and finely finished. The tin slitler is charged with fine emery and oil. Now begins the most important work. After the Pen leaves the hand of the burnisher it goes at once into the hands of the GRINDER who should be not only an experienced workman and a good mechanic, but a man of intelligence, for he must understand thoroughly and practically what is necessary to finish a perfect Pen. The Grinder at once applies the Pen to the slitler so as to make the inside surfaces of the slit and points exactly flat, and set them easy together. Unless this is well understood by the workman and carefully done, a perfect writing Pen is impossible, for he will leave it with a crooked or an uneven slit. The great object in having the inside edges of the slit square and flat is to prevent the nibs from crossing or slipping by each other.

The slit being made straight and perfect, the Pen is next fitted into the grinding holder, made of steel, with the diamond point alone projecting. It is then applied to the copper wheel (as shown in the cut which gives the exact operation), and the points are ground on the sides, back and end, while on the small copper wheels the face of the point is ground until the proper shape is secured. Here the skill and brains of the grinder are displayed, for if the correct shape is not given to the *point* it would be impossible to smooth and make it a good writing Pen. This is the most difficult part of Gold Pen making. A good workman cannot grind and smooth over two hundred good Pens in a week, though the men employed by the cheap manufactories claim to do as many in 7 or 8 hours. There are only a few excellent Pen grinders in the trade, and during the great demand for GOLD PENS at the commencement of the war in 1861, and to 1865, the supply was not at all equal to the demand.

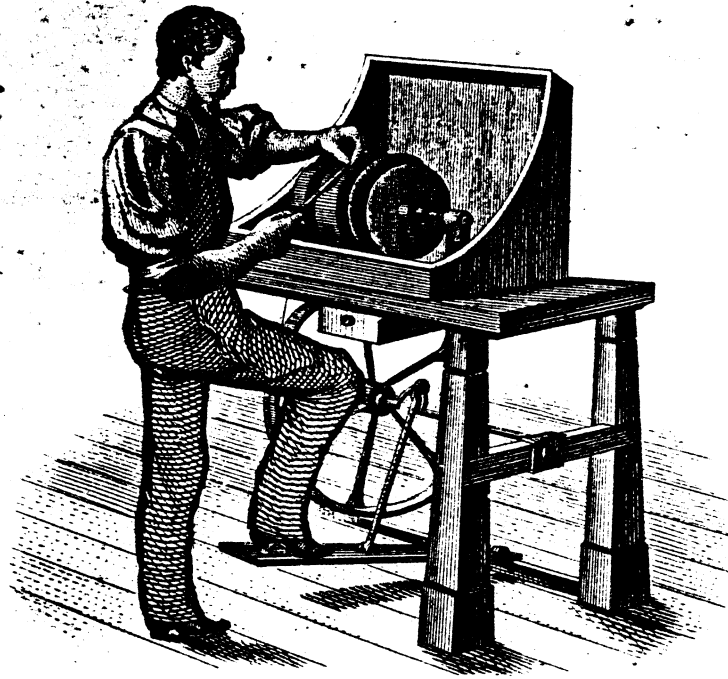
While grinding, the Pen is carefully examined with a strong lens, and finally fitted into a deak-holder and applied to paper and ink and thoroughly tested. Thus every defect is removed by the judgment and experience of the grinder. When that is done the Pen goes to—

1850, price in New York,	2.50.
1860, " " "	2.00.
1870, " " "	1.50.
1875, " " "	1.50.

The invention and use of labor-saving machinery has produced this happy result—aided, of course, by a growing demand, stimulated by active competition. There are now in this country better Gold Pen makers than can be found in Europe; and indeed it is but fair to say, that there are more Gold Pens made in New York in twenty days than are made in all other places in a whole year.

The use of the Gold Pen in America is almost universal, for the reason that it is not only the *best* and most perfect writing instrument—but it will outwear ten times its cost in Steel Pens. Hence, for comfort and economy it is incomparable. Besides, many a writer has lost the use of his hand because of the electricity conveyed to the nerves of the fingers and arm by the constant action and use of Steel Pens.

The noble goose quill has been superseded successfully by the superior Gold Pen; the former is troublesome to most writers to make perfectly, soon breaks, grows blunt and “splinters.” The corrosion of Steel Pens by the acids of ink cannot be prevented.



THE POLISHING LATHE.

This lathe consists of four wheels, two broad ones for polishing and rongeing the Pen on the back, and two very narrow ones for polishing the Pen on the inside. The wheels are covered with cloth of felt charged with rotten stone or tripoli; and for the rongeing buckskin is used. The Pen is now "nibbed" on the inside of the nibs, with Scotch stone. This roughens the nibs so as to hold ink and prevent it from flowing too freely. This done the Pen goes again to the grinder—who re-adjusts and carefully examines it to see if any injury was done while in the hands of Polisher. The points are delicately touched up; the nibs carefully adjusted so that they will not cross or lap over; and the Pens are then placed in strong alcohol which removes the oil and other polishing materials and makes the Pen perfectly clean.

After drying them in fine box-wood sawdust, the Pens are put up in boxes and sent to the office, where the Manufacturer PERSONALLY examines every Pen thoroughly, not only as to its writing qualities, but every part of the work and finish is carefully examined with the aid of a strong lens. If the slightest imperfection is discovered the Pen is returned to the Factory. The perfect Pens are finally counted and weighed and entered upon the stock book and are then ready for sale and delivery.

Therefore the "Gold Pen" is the great necessity, and every person who carries one, or who keeps it ready upon his desk or table for instant employment, has reason to thank Mr. HAWKINS for his energy and perseverance, Dr. Wollaston for his discovery of the *diamond point*, and the American manufacturers for their mastery of the art of causing the familiar little strip of Gold to spring like a Damascus blade, to run as smoothly as a piece of fine machinery, and to endure when all its rivals fade.

Dear Sir:

My Store and Office are at No. 2 Astor House, on Broadway, in the centre of the most important business part of New York.

I shall be pleased to have you make my office your headquarters when you visit our City. Your letters may be addressed to my care, or to yourself, P. O. Box 15, New York.

John Foley



COUNTING, WEIGHING AND FINAL EXAMINATION.

In the foregoing we have given only the principal operations appertaining to Gold Pen making, leaving out, necessarily, many details of minor importance.

(From "New York Mail.")

GOLD PENS.

HISTORY OF THEIR INVENTION AND AN ILLUSTRATED PROCESS OF MAKING THEM.

This finely printed volume gives, so far as we know, the only account of the invention and manufacture of the gold pen. It is published by Mr. John Foley, the celebrated Gold Pen manufacturer, at an expense of several thousand dollars, containing nearly five hundred engravings well executed and handsomely printed upon splendid plate-tinted paper by Mayer, Merkel & Ottmann.

This little instrument, which is now in universal use, required much ingenuity and a great many years to bring it to perfection. Mr. Foley has here given us an account not only of the progress of the invention, but a detailed story, fully and finely illustrated, of the process by which it is made, which is more complicated than many people imagine. The book, though intended to spread a knowledge of Mr. Foley's business, who is now the best known manufacturer in his line in the world, has a decided literary interest, and is an addition to our information of the subject. It will interest as well as instruct every man who uses a pen. More than fifty finely engraved cuts are devoted to the various numbers and sizes of gold pens, from the finely-finished, delicate No. 4 ladies pen to the large No. 12 bank pen. Many engravings show great progress in the handsome display of the numerous Pen and Pencil Cases and Pen Holders, made from fine gold, pearl, ivory, rubber and silver, and of all sizes and styles. Then follow several illustrations of the process and machinery employed for making the pens, how the diamond point is put on, its value, etc. Gravers of steel served for writing, as referred to by Job in speaking of an iron pen. The ancients used a metallic styli; pens of reed were made at a very early period. The quill pen of the swan, goose and crow followed until the year 1808, when Mr. Wise, an Englishman, invented the steel pen. This interesting account goes on till our present time and shows that the first diamond (Iridium) pointed gold pen was the invention of another Englishman, John Isaac Hawkins, who made the first gold pen in London in 1834. This little work, like everything Mr. Foley undertakes, is a decided success. Having a capital of over one hundred thousand dollars invested in his factory and business, he can, no doubt, well afford to invest several thousand dollars to produce such a fine book, the paper alone for which cost upwards of two thousand dollars.

The people of New York are indeed indebted to the persistent and public spirited Mr. Foley for his extraordinary services on behalf of the city in his famous contest with the corrupt "Tammany Ring." In 1869 he was elected to the "old" Board of Supervisors, of which the notorious Wm. M.

Tweed was President. Mr. Foley promised to break up the Board or stop the great frauds upon the city and tax-payers, and made his word good, for his activity forced Tweed, who then controlled the entire city and State governments, courts and all, to pass an act abolishing the Board July 4, 1870. Mr. Foley keeping a sharp eye upon the several millions of fraudulent bills, prevented Tweed from passing them for payment, but Tweed being determined to steal enough to cover the six millions of dollars, for which the bills were manufactured by Ingersoll, Garvey, and others, procured the passage of the bill creating the interim Board of Audit, consisting of himself, Mayor Hall and Controller Connolly to audit and pay all claims against the city. They had but one secret meeting, and in less than fifteen minutes ordered for payment six millions of fraudulent bills.

City bonds were issued and sold at once, and the amount was divided by Tweed and his friends. Mr. Foley was the first and only man to discover and expose this great fraud, which he did in his letter which was published August 21, 1871. (The facts and figures of this great swindle were fully set forth by Mr. Foley in his famous injunction suit, and are the foundation of all the legal proceedings, both civil and criminal, now and since instituted by Mr. O'Connor and others against Tweed and his followers).

At that time the whole nation was aroused by the exposures of the Tammany Ring, but neither the exposures of the press, nor the indignation of the community, seemed to have the desired effect. In fact the "Ring" power declared that the whole trouble had "blown over." The contest of the *New York Times* was about to fail. The ring managers utterly ignored that paper when Mr. Foley organized the first public meeting August 7, 1871. He presided, and in the presence of an immense gang of Tammany roughs, passed all the resolutions demanding the overthrow of the Ring power and the resignation of Mayor Hall, Tweed, Connolly & Co. Then followed, Sept. 6, 1871, the most important and successful act in the whole fight, viz.: John Foley's famous injunction suit by which the Tammany power was destroyed. The Supreme Court of New York granted the injunction, and a few days after Controller Connolly was forced to resign. Tweed and the other thieves soon after followed. It is not too much to say that Mr. Foley was the only man in our city who was willing to incur the great risk and responsibility of going into court and declaring that Tweed & Co. were thieves, and maintained his position, thus saving to the city many millions of dollars. He was chairman of the committee who made up and brought into existence the celebrated Committee of Seventy. No other citizen of New York has been so active and persistent, giving more of his time and means during the crisis than any one else, and his efforts have always resulted in success and for the public good.

☞ Duplicate Copies of this Book furnished for \$1.00 each.